Colonel Russell J. Hrdy
Program Manager, FCS Lethality

Colonel Hrdy is a native of Omaha, Nebraska and a 1981 graduate of the United States Military Academy at West Point, NY. In 1990, he received a Masters Degree of Science in Manufacturing Systems Engineering from Lehigh University.

His military education includes attendance at the Armor Officer Basic and Advanced courses, the Command and General Staff College, the Advanced Program Management course and the Industrial College of the Armed Forces.

Colonel Hrdy began his career as an Armor officer in the 3rd Infantry Division in Schweinfurt, Germany. Throughout his early career as a tank officer he held assignments as a Tank Platoon Leader, Support Platoon Leader, Tank Company Executive Officer, Tank Company Commander, and Headquarters Company Commander. In 1993 he became a member of the Acquisition Corps. Colonel Hrdy's acquisition experience includes assignment as the Executive Officer for the Program Executive Officer, Armored Systems Modernization; Research and Development Coordinator for the M1A2 Tank program; Chief Tank Branch, Directorate of Combat Developments, Fort Knox, KY; System Coordinator in the Office of the Assistant Secretary of the Army for Research Development and Acquisition; Product Manager for the Grizzly Combat Obstacle Breacher; and Project Manager for the Crusader Program, Picatinny Arsenal, NJ.

Colonel Hrdy and his wife Amy have two daughters, Katie and Faith.

Presented

By

COL Russell Hrdy

FCS Organizational Vision

"One Team - Equipping our Warfighters with the world's best capability. "

Milestone B and FCS

- **What does Milestone B mean?**
  - Affordable increment of militarily-useful capability identified and technology demonstrated
  - Program initiation and transition to system(s) integration and demonstration
  - Developing an effective, producible, and sustainable system(s)
  - Next steps are to integrate subsystems, start engineering design, and reduce risk

- **While program seems ready to transition to SDD, it lacks definition typical at Milestone B**

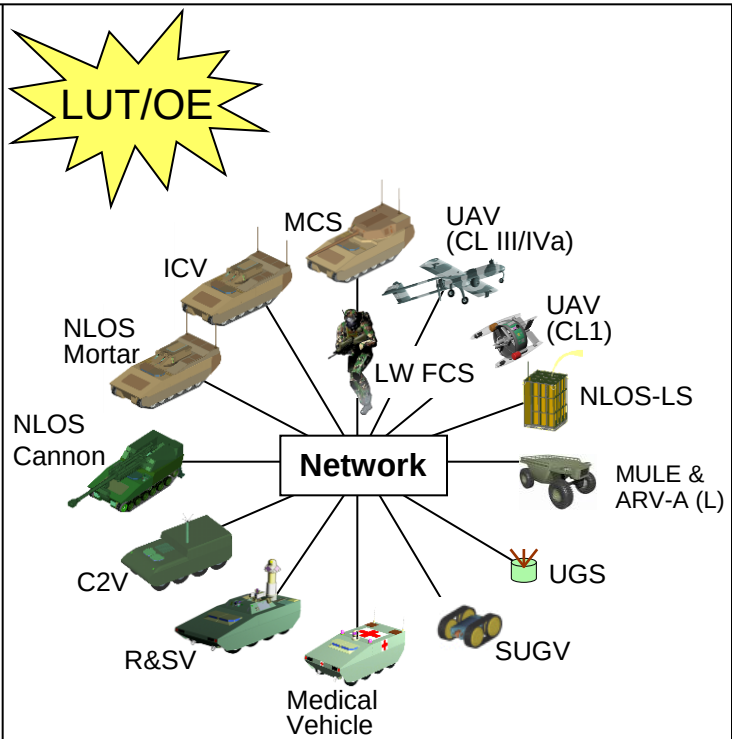
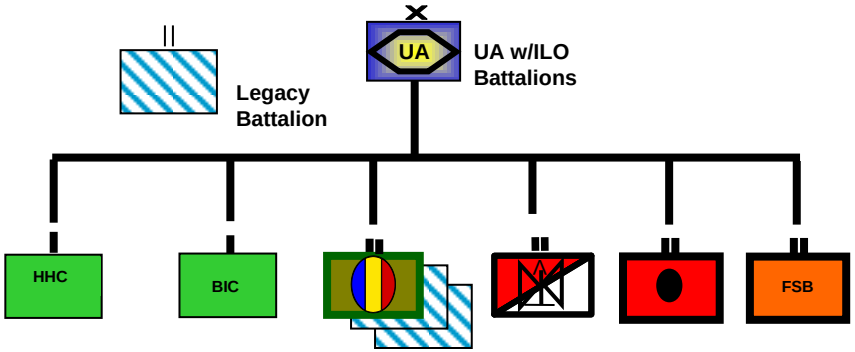
  - Several KPP thresholds remain undefined
  - Technology readiness levels (TRL) less than desired for some systems
  - Schedule is aggressive and assumes success
  - CAIG cost estimate does not meet normal standards and level of fidelity
  - FY04 President's budget reflects funding shortfalls

Milestone Decisions

- **Approved the FCS Program as a single MDAP (ADM)**
- **Approved FCS Program entrance into SDD for Increment I (ADM)**
- **Approved time-phased development of discrete systems leading to IOC (ADM)**
- **Approved Army (AAE) management below MDAP level (ADM)**
  - Single program with single funding line
- **Additional Requirements (ADM)**
- **Approved the initial production quantities for Increment I (ASR)**
- **Approved APB at the Family of Systems Level (APB)**

Spiraling Capabilities Over Time (1 of 2)

FUTURE COMBAT SYSTEMS
FCS
One Team – The Army/DARPA/Industry

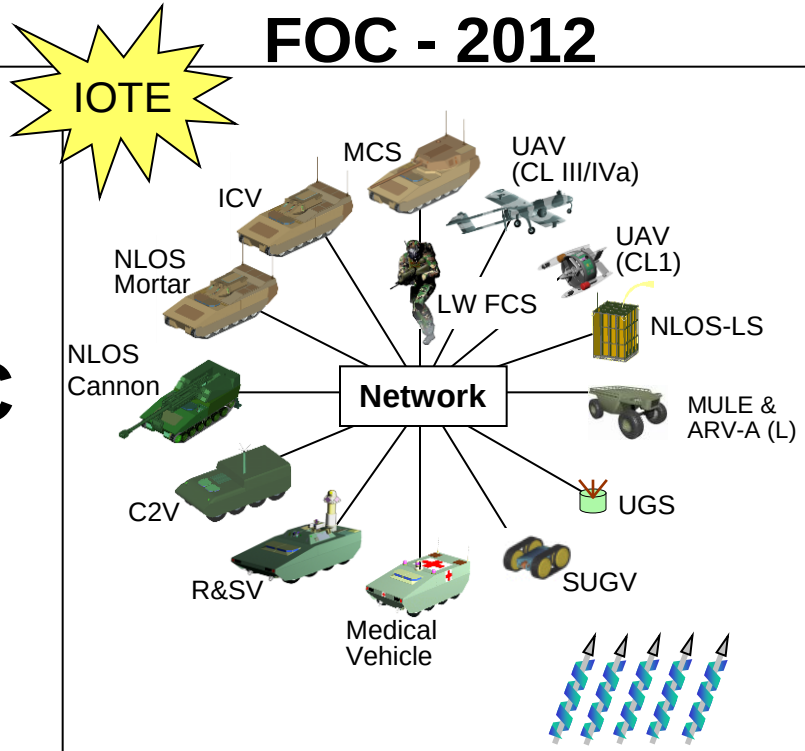
2008	IOC - 2010	2010 Organization
Network Prototypes Training Testing	 •HEMTT Wrecker ILO for FCS Recovery & Maintenance Vehicle	 Manned Systems: • MCS 20 • ICV 26 • NLOS-Mortar 8 • NLOS-Cannon 6 • C2V 24 • R&SV 10 • Medical Vehicle 9 Unmanned Systems: • UAV (CL III/IVa) 17 • UAV (CL I) 15 • NLOS-LS 8 • MULE & ARV-A (L) 12&5 • UGS 50 • SUGV 18 UA (w/2 Legacy Battalions)
KPPs	Essential Joint Interoperability, Networked Battle Command, Networked Lethality, Transportability, Training, Survivability (Limited Achievement of KPPs)	

Spiraling Capabilities Over Time (2 of 2)

FUTURE COMBAT SYSTEMS
FCS
One Team – The Army/DARPA/Industry

2010 — FOC - 2012 — 2012 Organization

IOC

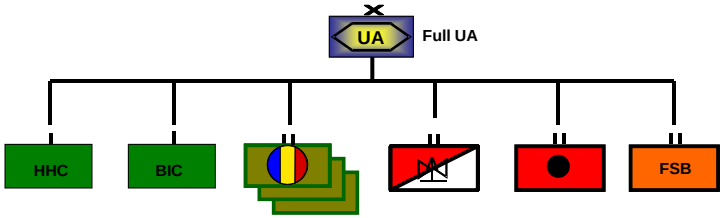


- HEMTT Wrecker ILO for FCS Recovery & Maintenance Vehicle

Spiral Forward Systems:
- **UAV (CL II)**
- **Armed Robotic Vehicle-Assault & Recon Variants**
- **Loitering Attack Munitions**
- **Intelligent Munitions System**

KPPs

Full-Threshold Joint Interoperability, Networked Battle Command, Networked Lethality, Transportability, **Sustainability/Reliability**, Training, & Survivability



Manned Systems:	
• MCS	60
• ICV	84
• NLOS-Mortar	24
• NLOS-Cannon	18
• C2V	49
• R&SV	30
• Medical Vehicle	29

Unmanned Systems:	
• UAV (CL III/IVa)	56
• UAV (CL I)	54
• NLOS-LS	24
• MULE & ARV-A (L)	54&27
• UGS	157
• SUGV	81

- **Adds two UA Battalions**
- **Adds two NLOS Batteries**
- **Full complement of MV/C2V/UAVs**

Full Unit of Action

OSD Reviews

FUTURE COMBAT SYSTEMS
FCS
One Team – The Army/DARPA/Industry

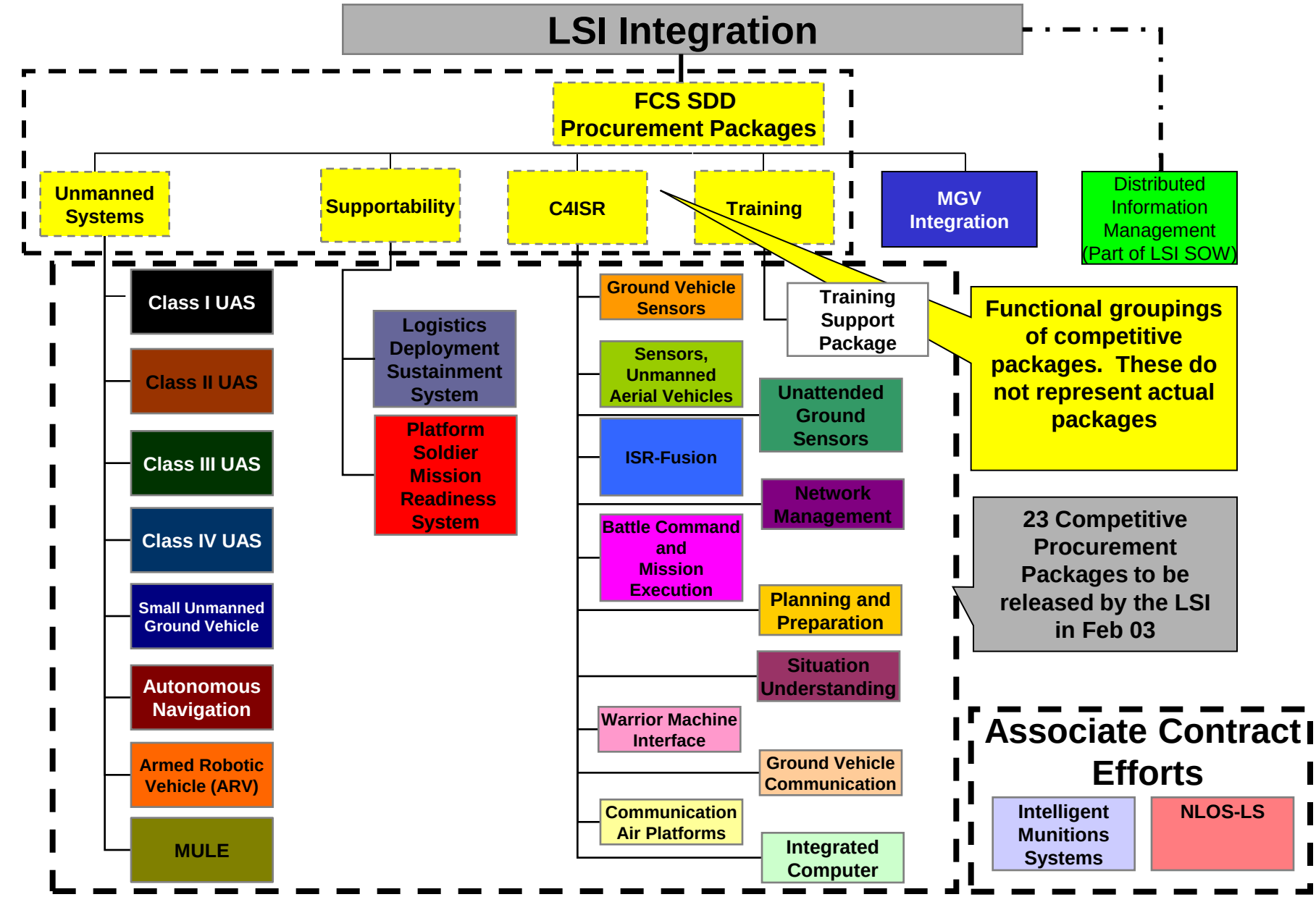
Integrated Baseline Review | **PDR** | **CDR** | **Integration Phase 2 Test** | **Limited User Test (LUT) #2**

USD(AT&L,DS) representatives participate in events
USD(AT&L,DS) with support from C3I convene OIPT
- **No issues: USD(AT&L,DS) forwards memo to DAE confirming readiness to proceed**

DAB convenes if issue(s) are unresolved

Risk Review OIPT (Nov 03) | **Preliminary Design Review DAB (Dec 04)** | **Review OIPT (Jun 05)** | **Critical Design Review DAB (Mar 06)** | **LL Review OIPT (Mar 07)** | **MS C Initial Production Decision DAB (Mar 08)**

Procurement Package Summary

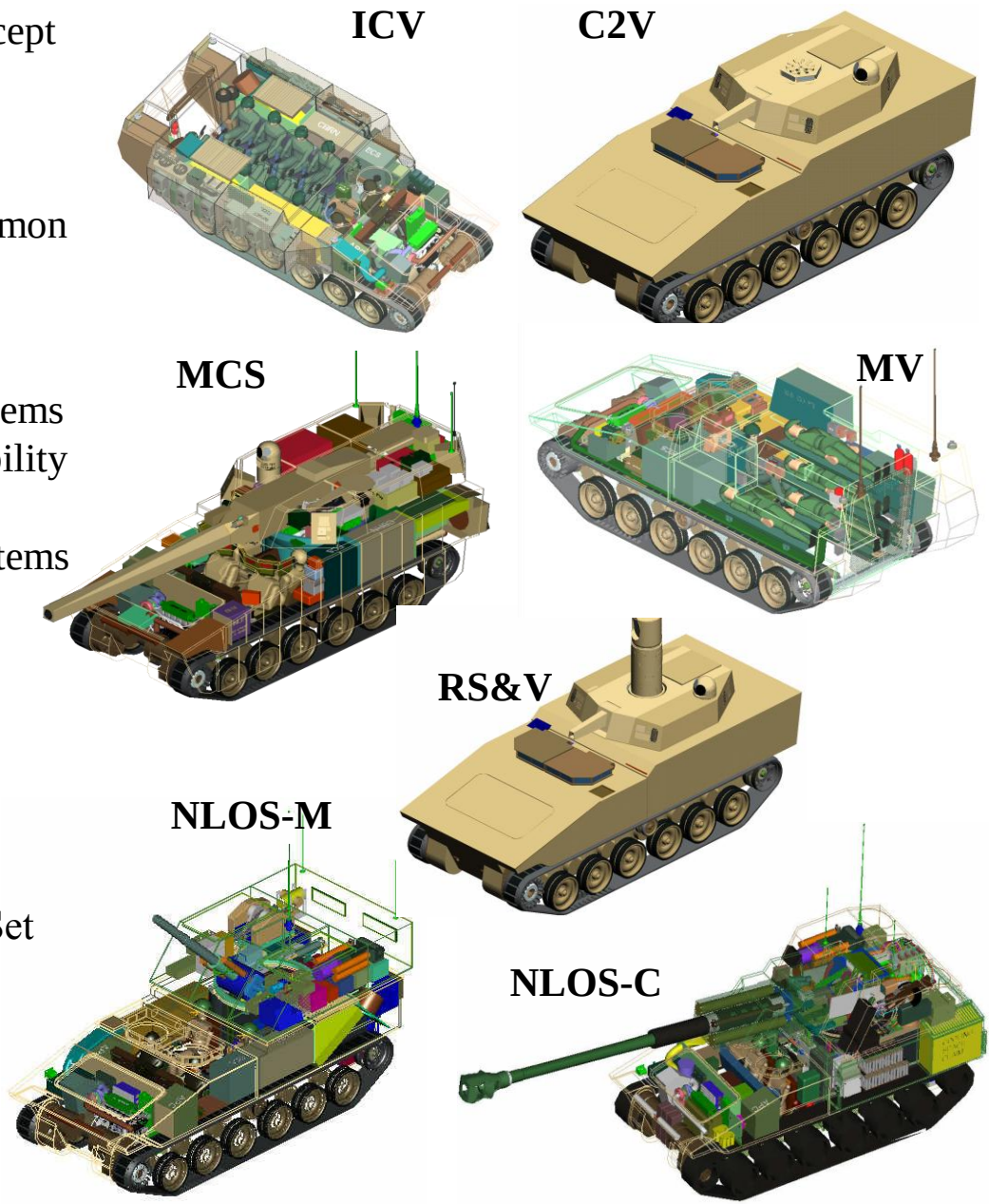


Version 2

MGV Pre SDD Accomplishments

FUTURE COMBAT SYSTEMS
FCS
One Team – The Army/DARPA/Industry

- Established Common Subsystem Design Concept
- Lethality Suites For Each Variant Defined
- Developed Physical Architecture for All Common and Variant Subsystems
  - Pro-E Models Developed
- Established Initial Allocations for All Subsystems
  - Weight, Volume, Power, Cooling, Reliability
- Identified Internal Interfaces Between Subsystems
- Identified Driving Design Requirements for Common and Variant Subsystems.
- Identified High Risk Areas.
- Executing Design Optimization Process With User Involvement to Achieve "Best Balance Set of Requirements"
- Implemented Soldier-Centric Design Philosophy Through Pit Stop Engineering



Application of Pit Stop Engineering Philosophy into MGV Pre-SDD Development

- **1/6 Physical model Constructed for all Variants and Major Common Subsystems**
- **Being used as a tool for:**
  - Optimizing designs for space, weight, and soldier use/maintenance.
  - Common packaging of components to reduce weight & volume.
  - Modular design to allow commonality and upgrade
  - Reduction of tools and down time
  - Enhance crew station design for soldier comfort/fatigue reduction.
  - Augment traditional design and modeling and simulation.
- **Preliminary Brain Storming Sessions have resulted in:**
  - Soldier first design approach
  - Team Building/Collaboration/Integration
  - Enable design team paradigm/culture shift
  - Management and Technical Design Lead Support
  - Design influence through the application of Standards of Excellence

MGV Challenges

- C-130 deployability constraints – both weight and volume
  - Will require **BOTH** design and requirements optimization
- Extremely aggressive RAM requirements
- Synchronizing schedules with C4ISR, Training, and other IPTs and defining external interfaces
- Implementing Timely Design Optimization/Trade Process with User to Achieve a “Best Balanced Set of Requirements”

Summary

- The New FCS Program Reflects the Evolutionary Approach to <u>Delivering Capabilities</u>
  - Because of This, the Program Lacks the Definition Typical at Milestone B
  - OSD Will Maintain a High Degree of Oversight
- FCS Program Is Scheduled Challenged but Event Driven
- By Leveraging NLOS-C CTD Program, MGV SDD Like Activities Have Been in Process for Nearly a Year
- MGV Concepts Are Established, Risks Are Known, the Design Is Being Optimized, and the Program Is Synchronized With the FCS Program Plan